Re: Thanks for your video!!!

Prof. Costantino Sigismondi <prof.sigismondi@icra.it>
18.03.2024 Pzt 23:38
Kime:Derya PAMUKTULUM <dpamuktulum@gmail.com>

2 ek (482 KB)
Faccia Nord 14 marzo.jpg; Faccia Sud 14 marzo.jpg;

Dear Derya

thank you for the explanations.

The accurate measurements could be probably done on ideal lines, because as you know from Egypt Pyramids, the faces are not perfectly plane. There are made of blocks... and only the fitting lines can be used to point somewhere.

Here the Cestia Pyramid is not flat as well. So I made the reverse reasoning: if the Sun is perpendicular to its surface at a given time the azimut and inclination of the Pyramid are the one of the Sun.

And this was proved. Some more calculations can be done in spherical trigonometry to obtain the 0.1° accuracy.

Obviously being a 2-variable problem I can have a minimum distance of the Sun to the real ideal flat face orientation, and in the early morning of march 14 I had no time to improve the simulation below 1° of accuracy.

For experience I know that an experiment is better than a theory only, so I decided to do it in any case...few hours after reading your email...(I have no "notification" so I read when I read :-) probably at 11 PM...9 hours before being in front of the Pyramid.

The accurate time, and the solar ephemerides, are the bases of my method: I can measure an alignment of a building by the position of the Sun grazing to a building at a given time. On this same method at ENEA they made "Sunpass" a compass with the Sun.
ELECTRONIC SOLAR COMPASS — Enea

So for example I check the refraction of the atmosphere at sunrise or sunset by the exact timing of that phenomenon (first/last light).
https://youtu.be/8asSG9UV1nA
In 2015 that azimuth was obtained by the exact time in which the Sun's shadow was cutting into two parts the surface of the northern face of the Pyramid...but I made it with the photos of Di Vita.

The shadow of the Sun on the two faces (South and North) on march 14, 2024 was partial either because of the solar radius of 16' which illuminated from 16' of inclination both the surfaces, either because of the irregularities of the same surfaces, but also in this case the accuracy for the azimuth direction was fair. Moreover the shadow is ON/OFF only for vertical structures, and the Pyramid is not...

Your hypothesis on the date of Cestius' death is a very good one.

Professional measures by geometers with total stations would probably solve the problem of the dimensions of the Pyramid, and its inclination, as you say in your paper Piramide Cestia (rombergintegrali.org)

The absolute azimuth, like the 204°.27 can be obtained in other days, with similar approaches (filming the Sun's alignment with one of the faces). The accuracy of 1 second of time is very difficult to be obtained in such measures for several reasons, first of all the irregularity of the surface of the Pyramid. 1 second = 15'' ... 1 minute is more reasonable, and the verification is then possible to 1/4°. But also 2 or 3 minutes are also possible, as you can check by making a video (timelapse) of the Sun grazing on a vertical wall: the grazing lasts 2-3 minutes, and some irregularities are greatly visible and they affect the final disparition time of the sunlight over that wall.

The inclination of 22° also gave the problems of the irregularity, even if the experiment was 9 years ago, I remember that it was complicate to state when the Sun rays were parallel to the face of the Pyramid... and the experiment could last many days because the meridian heigth did change slowly day by day... last but not least is the possibility to go there...

anyway in this paper, that you quoted already
Gerb-9-2016-Sigismondi-Piramide-31-34.pdf (icra.it)
I gave an uncertainty of the azimut of ±1.5°, and on the inclination I wrote that the pyramid has a bulge (spanciamento in Italian) near its center, and on this bulge the sunrays are blocked, So the architects/geometers can measure an ideal inclination from the top to the bottom... but the reality after 2 millenia, the situation is slightly different...for this reason an uncertainty on the exact date and time of death of (G)Caius Cestius can remain.

Finally I was aware of the work of Kate Spence on Gizah's Pyramids, when I started the observations at our Cestia Pyramid in 2015.
Kate Spence. Nature 408 , 320–324 (2000)

Are you a mathematician?

Greetings

Costantino

PS my answer to you are in a personal correspondance, not in an official publication, where I should take more time to consider all the things. Usually to focus well a problem I need more than few tens of minutes in my spare time :-) so please do not consider all what I write to you as a publication... to do that we need more time.

Il giorno lun 18 mar 2024 alle ore 12:00 Derya PAMUKTULUM <dpamuktulum@gmail.com> ha scritto:

Dear Sigismondi, I watched the video you took on 14 March 2024. Before taking this video, you set the azimuth to 114° 50' 38.8'' and the altitude to 22° 01' 35.6'' at 08:29:48 on 14.03.2024 with Stellarium 0.20.2. However, the southeast azimuth of the pyramid is 114° 16' 12'' (=114.27°. This azimuth was set according to the azimuth of 204.27° taken on 28.05.2015, 13:45:17). However, according to the Starry Night Pro Plus 8 programme, on 14.03.2024, 08:26:50, the azimuth on 14.03.2024, 08:26:50, was 114° 16.238' and the azimuth on 14.03.2024, 08:26:50, was 21° 32.431', so even if you set the azimuth exactly, you would have missed the altitude and you missed the azimuth by setting the altitude exactly. But in the end, it couldn't have been better than what you did on 14 March 2024. So thank you for the video (For more information, see "Theory Tested on Π Day!").

Now you asked me for a clear proof, but it is a fact that this is not possible. Having worked at the Pyramids of Giza, I was quick to realise what the architect could have done in the Pyramid of Cestius, because the pyramid was shifted 24.27° eastwards in the north-south direction and its height was adjusted so that the sun's rays were perpendicular to the southeast face, i.e. at an inclination angle of 22°. Moreover, the pyramid had no entrance when it was first built (the entrance on the north-west face was opened by the Pope in the 17th century). Therefore, when all these factors are added together, it is clear that the architect aligned the pyramid with the Sun to the date of the death of Gaius Cetius. This would be 15 March in today's Gregorian calendar, but 2 March 16-12 BC in the Julian calendar. The problem is that the base and height of the pyramid have not been scientifically measured until now. The Italian architect and civil engineer Celeste Rinaldi (1902-1977) and his assistant Vito Maragioglio (1915-1976) could have done so, as could Flinders Petrie before working on the Egyptian Pyramids in 1946. But because of the unrest in Italy after World War II, they travelled to Egypt, where they worked on the pyramids and published their book "L'Architettura delle Piramidi Menfite Parte II-VIII" in 1963-1977. I know both of them because I worked in the Giza Pyramids, but there is not enough information about them. I learnt about them in "Babylonian and Egyptian Pi, Bonus: Together with MMP 10" with pictures. I have mentioned them many times in my articles on the Pyramids of Giza on my website and have included them in my work. Furthermore, I have analysed the work of Da Vinci and the architect Cesare Cesariano in my article "Figures of the "Perfect Man" in the European Renaissance".

Accordingly, the main problem, as I explained above, is that the measurements of the pyramid have not been taken properly until now. In fact, although I sent an e-mail to the people involved in the restoration of the pyramid in 2012-2014, I did not receive a response, nor did they publish an article after the restoration. But despite all these negativities, my article "Section 1.8. Pyramid of Cestius" is excellent. If in the future the pyramid measurements are taken scientifically, then this article will be useful to them.

Sincerely Derya PAMUKTULUM.